these are smaller ranges, viz: the Massanutton Mountain, Powell's Mountain, Three-Top Mountain, and others. Skyland is so located on the west slope of the Blue Ridge, near Stony Man Mountain, that it has immediately on its west the gap called Newmarket Gap, near the southern end of Massanutton Mountain. To the west of this the line of sight passes over the hills of the southern end of the ridge of North Mountains and strikes the Shenandoah range of mountains. The upper part of the valley of the Shenandoah River lies between the Blue Ridge on the east and the Shenandoah Mountains on the west.

Mr. Cragin adds:

Many of the thunderstorms in the Shenandoah Valley seem to be what are called "valley" storms in Professor Davis's Meteorology, caused by ascending hot air in the way he speaks of, and not of much strength.

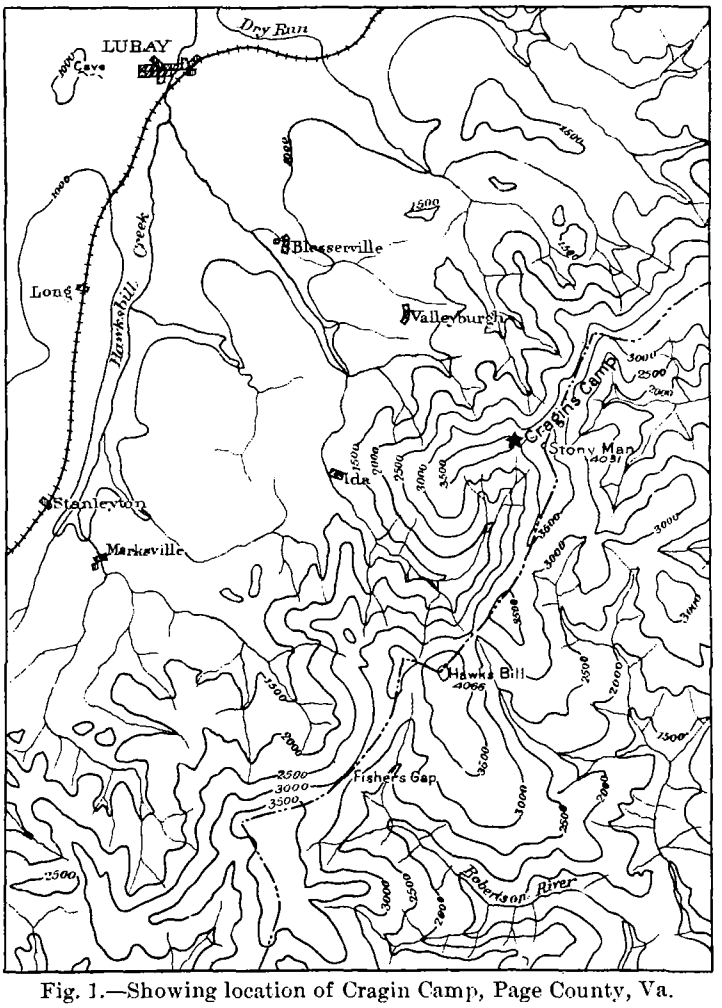

Fig. 1.—Showing location of Cragin Camp, Page County, Va.

CLIMATOLOGY OF ST. KITTS, W. I.

By W. S. ALEXANDER, Observer, Weather Bureau, dated August 27, 1900.

A paper containing certain descriptive and tabulated data relative to this subject was published in the MONTHLY WEATHER REVIEW, Annual Summary, 1899, and some additional details in the February, 1900, REVIEW. The fact that these meteorological data cover a period of forty-four years seems to justify, if, indeed, it does not demand, a more extended discussion. It appears to be important, in order to arrive at the true and full value of these old records as well as of the service performed by the compilers of the same, that a statement in detail be made of the conditions and agencies involved in the original records, so far as can now be done. The present discussion is, therefore, devoted to this end.

Following a suggestion from the editor of the REVIEW, the work of each observer concerned has been reduced independently and the results given in Table 1. The fact that the original records were prepared by different observers, at different times, with different instruments differently exposed, renders this procedure necessary in order to avoid fallacious results. Perhaps the materials supplied from these various sources can be reduced to a homogeneous system of normal values.

Referring to Table 1, it will be observed that there are four divisions, each presenting the means by hours as obtained from the compilations of the observer indicated at the head of the division. At the head of the first division is the name of George James Evelyn, to whom much praise is due for his long and patient labors, extending over a period of twenty-seven years (from 1856 to 1882, inclusive), and for his kindness in permitting the exclusive use of the same for publication in the MONTHLY WEATHER REVIEW. Mr. Evelyn came to St. Kitts sixty-nine years ago and, although now a nonagenarian, is still in the enjoyment of excellent health and a youthful spirit, his greatest impediment being, apparently, defective eyesight. The writer has more than once listened with pleasure to his reminiscences of the distant past. He was receiver-general or subtreasurer for the colony during the time he made his meteorological observations and did this work of his own accord in addition to his official duties.

The barometer used by Mr. Evelyn belonged to the government and was presumed to be a good one; it was one of the fixed cistern manufactured by J. Nixon, London. The tube of this barometer is smaller than the tubes of the barometers used by the Weather Bureau and is encased in a wooden frame, to which is attached a metal scale and vernier. It was exposed in an east room, on the ground floor of the treasury building, being attached to the partition wall on the west side of the room, and was not, perhaps, more than 12 feet above sea level. It was not moved during the whole series. The readings were made by simply adjusting the vernier and observing the figures then indicated. Mr. Evelyn *is positive that no corrections were applied to the readings*, hence it would appear that unless the manfacturer, by some method of calibration, made compensation for instrumental errors, and it seems he did, these readings may be considerably out. Inasmuch, however, as this error, whatever it may be, is constant, or nearly so throughout, there is a comparative value in the results which ought not to be overlooked.

Attention is invited to the explanatory note under Table 1. This table upon a cursory or superficial inspection may appear to be erroneous in view of the well-known diurnal barometric changes. Under normal conditions in all tropical regions the barometer rises from 4 a. m. to 10 a. m., and falls from 10 a. m. to 4 p. m., and so on. Mr. Evelyn's observations apparently run contrary to this recognized principle, as is seen by comparing the 8 a. m. mean, for instance, with the 9 a. m. or 10 a. m. mean. But this is evidently fallacious for reasons which will appear from a study of the note just referred to. If now we compare the 8 a. m. mean with the 12 noon and 4 p. m. means, as is manifestly proper, we find that they are in accord with this principle. For instance, the January mean for 8 a. m. is 30.015; for 12 noon, 30.025; and for 4 p. m., 30.017. The February mean for 8 a. m. is 30.019; for 12 noon, 30.033; and the 4 p. m., 30.026, and so on, just as the principle would lead us to expect. So, also, the 9 a. m. means may be compared with the 2 p. m. means and the same relation is observed. The same is true of the 10 a. m. and 2 p. m. means, with possibly one exception, namely, the means for February. Here we find the 10 a. m. mean less than the 2 p. m., whereas we should expect the reverse. The first

TABLE 1.—*Means of observations at Basseterre, St. Kitts, W. I.*

Months.	Mr. George James Evelyn.												Mr. E. A. Hancock.				Mr. C. O. Plageman.				U. S. Weather Bureau.					
	8 a.m.		9 a.m.		10 a.m.		12 noon.		2 p.m.		4 p.m.		9 a.m.		10 a.m.		3 p.m.		9 a.m.		3 p.m.		8 a.m. (8:49 a.m. local).		8 p.m. (8:49 p.m. local).		12 noon (12:49 p.m. local).	
	Baro. (10)	Ther. (10)	Baro. (14)	Ther. (14)	Baro. (8)	Ther. (1)	Baro. (10)	Ther. (11)	Baro. (15)	Ther. (16)	Baro. (10)	Ther. (11)	Baro. (3)	Ther. (3)	Baro. (3)	Ther. (3)	Baro. (6)	Ther. (6)	Baro. (1)	Ther. (1)	Baro. (1)	Ther. (1)	Baro. (1)	Ther. (1)	Baro. (1)	Ther. (1)	Baro. (1)	Ther. (1)
January	30.015	76.9	29.979	79.1	30.013	79.4	30.025	81.3	29.980	81.6	30.017	80.4	29.983	78.4	30.006	79.7	29.982	81.5	30.016	80.5	29.991	82.4	30.018	77.9	29.994	76.2	30.025	79.6
February	30.019	76.3	29.984	79.1	29.983	79.3	30.031	81.2	29.985	81.7	30.026	80.4	30.009	78.9	30.037	79.3	29.987	81.2	29.948	78.5	29.976	80.3	30.070	77.1	30.044	75.5	30.081	80.0
March	29.994	77.7	29.972	79.0	29.990	79.1	30.008	81.3	29.975	82.1	29.993	80.6	29.997	79.8	30.034	80.2	29.970	81.8	29.957	78.6	29.943	80.5	30.058	76.1	30.030	74.2	30.037	79.1
April	29.988	78.3	29.964	81.0	30.000	80.6	29.998	82.4	29.970	83.2	29.987	81.7	29.991	82.2	30.026	80.8	29.965	83.0	30.018	81.4	30.000	84.3	30.021	78.7	30.003	76.3	30 006	80.7
May	29.977	81.0	29.953	82.4	29.983	81.4	29.985	83.8	29.953	84.6	29.978	83.1	29.971	82.8	29.992	83.9	29.953	83.7	29.983	82.7	29.971	85.4	30.038	80.7	30.017	78.3	30.018	83.2
June	30.014	81.5	29.989	83.9	30.018	84.0	30.020	84.5	29.993	85.9	30.014	83.6	30.008	83.3	30.044	85.1	30.007	84.9	30.016	84.0	30.008	86.1	30.030	81.6	30.023	78.9	30.016	84.2
July	30.017	82.0	29.988	84 2	29.990	83.8	30.024	85.4	29.987	86.3	30.019	84.3	30.010	83.2	30.039	86.4	30.002	85.9	30.001	83.7	29.989	84.9	30.000	81.4	29.997	79.7	29.991	84.1
August	29.984	82.7	29.946	84.9	29.997	84.5	29.990	85.9	29.951	87.0	29.979	85.2	29.979	84.2	29.986	86.7	29.953	86.4	29 987	83.7	29 978	85.1	29 964	81.9	29.954	80.2	29.952	84.6
September	29.960	83.2	29.924	85.0	29.963	83.9	29.962	85.8	29.926	86.7	29.965	85.1	29.956	83.2	29.988	86.0	29.927	86.1	29.939	84.2	29.925	84 4	29 973	82.2	29.959	80.1	29.946	84.7
October	29.923	82.8	29.904	84.3	29.930	84.3	29.926	85.2	29.902	86.4	29.916	84.4	29.957	85.5	29.953	85.5	29.882	86.2	29.954	83.5	29.940	85.6	29.918	82.1	29.909	79.1	29 881	84.8
November	29.929	80.7	29.904	83.0	29.930	83.1	29.939	84.0	29.905	84.9	29.930	83.0	29.927	81.2	29.916	83.3	29.895	83.4	29.929	80.9	29.918	81.4	29.947	82.1	29.923	79.1	29.893	83.5
December	29.968	78.4	29.948	80.9	30.003	81.9	29.975	82.2	29.955	83.3	29.969	81.4	29.944	80.5	29.966	80.8	29.928	81.6	....	....	....	....	29.963	79.0	29.941	74.9	29.915	82.0
Yearly means	29.982	80.1	29.954	82.2	29.983	82.1	29.990	83.3	29.957	84.5	29.983	82.8	29.985	82.0	29.998	83.1	29.953	83.8	29.981	82.0	29.966	83.7	29.999	80.1	29.983	77.7	29.980	82.5

EXPLANATORY.

Local time, which is forty-nine minutes faster than seventy-fifth meridian, is used throughout, except by the United States Weather Bureau. The figures, in thesis, just below the headings "Baro." and "Ther." indicate the number of years upon which the mean is based.

A. *Evelyn's record.*—1. The 8 a. m., the 12 noon, and the 4 p. m. readings were made from 1858 to 1867, inclusive—ten years. 2. The 9 a. m. readings were made from 1869 to 1882, inclusive—fourteen years. 3. The 10 a.m. readings were made in 1856, 1857, and 1868—three years. 4. The 2 p.m. readings were made from 1868 to 1882, inclusive—eleven years.

B. *Hancock's record.*—1. The 9 a. m. readings were made from 1892 to 1894, inclusive—three years. 2. The 10 a. m. readings were made from 1895 to 1897, inclusive—three years. 3. The 3 p. m readings were made from 1892 to 1897, inclusive—six years.

C. *Plageman's record.*—The readings were made at 9 a. m. and 3 p. m. from January to November, inclusive, 1898.

D. *The United States Weather Bureau record.*—1. The 8 a m and 8 p.m. readings (seventy-fifth meridian time) were made from March, 1899, to February, 1900—one year. The readings for January and February, 1900, were used instead of those for 1899, because the observations were made at 6 a. m. and 6 p. m. during those months in 1899. 2. The 12 noon means are taken from the Richard barograph for 1899.

It will be observed that these hourly means are based upon the means of consecutive years with one exception, the 10 a. m. mean. The thermometric means are for very nearly the same years as the barometric. In general, the barometric means are believed to hold good for sea level.

TABLE 2.—*Showing monthly means for certain hours and years, together with other data.*

Date.	Air pressure (in inches).		Temperature (Fahrenheit).										Dew-point.		Relative humidity.		Wind.			
			Dry.		Wet.				Mean.	Highest.		Lowest.					Prevailing direction.		Average No. miles.	
							Max.	Min.			Date.		Date.							
	10 a.m.	3 p.m.	10 a.m.	3 p.m.	10 a.m.	3 p.m.			*					10 a.m.	3 p.m.	10 a.m.	3 p.m.	10 a.m.	3 p.m.	Per day.	Per hour.
1892.																				
January	30.038[b]	29.984[b]	78.9	79.4	74.7	74.6	83.9	72.8	78.4	87	20	70	5†	71	71	80	78[a]	....	....	....	....
February	30.644	29 990[d]	78.3	78.6[d]	71.4	71.0[d]	83.8	70.4	77.1	89	26†	68	20†	62	66	69	68[d]	....	....	....	....
March	30 051	30.005[d]	80.7	79.3[e]	76.8	75.7[d]	85.3	72.0	78.6	90	4†	68	4	74[d]	73	87	83[d]	....	....	....	....
April	30.072	30.020[e]	80.6	79.3[e]	75.8	75.0[e]	83.6	72.4	78.0	86	10†	70	1†	73	72[e]	78	79[e]	....	....	....	....
May	30.010	30.017[e]	82.0	80.5[e]	78.9	77.8[e]	84.3	74.4	79.4	89	29	71	9†	77	76[e]	85	87[e]	....	....	....	....
June	30.081	30 060[e]	84.6	84.0[d]	81.2	80.7[e]	87.0	75.6	81.3	89	30	71	20	79	78[e]	84	85[e]	....	....	....	....
July	30.086	30.049[e]	85.6	86.4[e]	82.7	83.4[e]	89.1	75.5	82.3	91	31	72	22	81	81[e]	86	85[e]	....	....	....	....
August	30.008	29.968[f]	86.4	87.3[f]	84.2	85.1[f]	89.9	74.6	82.2	94	19	71	23	83	83[b]	88[b]	89[b]	....	....	....	....
September	30.009	29.964[e]	85.1	86.7[e]	82.8[e]	84.1	89.8	74.2	82.0	94	11†	72	8†	81	82[e]	....	....	....	....	....	....
October	29.955	29 915[e]	85.6	85.9[e]	78.6	79.0[e]	89.0	74.7	81.8	91	4	71	3	77	74[e]	....	....	....	....	....	....
November	29.917[a]	29.885[e]	82.8[a]	81.6[e]	77.2[a]	76.6[e]	86.2	72.4	79.3	89	1†	70	5†	74[a]	73[e]	....	....	....	....	....	....
December	29.988	29.950[e]	81.0	80.8[e]	74.6	74.1[e]	84.3	71.6	78.0	86	5†	69	21†	70	69[e]	....	....	....	....	....	....
1893.																				
January	29.991	29.968[f]	81.4	82.9[f]	74.1	74.8[f]	85.2	70.8	78.0	87	27	67	10	69	69[f]	....	....	....	....	....	....
February	30.027	29.993[f]	80.9	82.2[f]	73.5	74.2[d]	84.3	70.2	77.2	87	3	66	9	68	69[f]	....	....	....	....	....	....
March	30.013	29.969[e]	79.8	82.3[e]	69.9	71.8[e]	85.2	69.2	77.2	87	6†	66	11†	66	65[e]	....	....	....	....	....	....
April	30.002[a]	29.970[e]	80.3[a]	83.0[e]	74.4[a]	74.6[e]	85.5	71.1	78.3	88	1†	66	12	68[a]	69[e]	....	....	....	....	....	....
May	29.981[a]	29.962[f]	84.3	84.2[f]	77.1[a]	76.9[f]	86.6	73.2	79.9	89	10	70	14	72[a]	72[f]	....	....	....	....	....	....
June	30.004	29.992[f]	85.2	85.3[f]	78.0	78.0[f]	87.7	74.6	81.1	90	8†	70	9	73	73[f]	....	....	....	....	....	....
July	29.975	29.957[f]	88.4	86.0[f]	79.5	79.6[f]	88.5	74.7	81.6	94	30	70	5	72	75[f]	....	....	....	....	....	....
August	29.946	29.932[e]	86.9	86.2[e]	80.2	79.2[e]	90.5	75.6	83.0	94	31	72	16†	76	75[e]	....	....	....	....	....	....
September	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
October	29.945[b]	29.919[f]	85.4[b]	83.7[f]	79.1[b]	78.0[f]	88.0[f]	73.9[f]	81.0	92[b]	15	70[b]	30	79[b]	76[f]	....	....	....	....	224	9.3
November	29.865	29.823[g]	84.6	83.0[g]	77.3	76.2[g]	88.1	72.4	80.2	92	9	68	30	75	74[g]	....	....	....	....	240	10.2
December	29.965	29.916[e]	80.1	80.1[e]	74.0	74.0[e]	83.9	71.4	77.6	92	8	68	21	72	72[e]	....	....	....	....	378	15.5
1894.																					
January	29.988	29.964[g]	78.8	79.6[g]	72.6	72.8[g]	83.0	69.8	76.4	85	29†	65	22	68	68[g]	....	....	....	....	337[c]	14.0
February	30.049[a]	30.010[b]	78.7[b]	80.4[b]	71.9[b]	72.2[b]	83.6	69.6	76.6	86[b]	17	66[b]	10	67	67[b]	....	....	....	....	361	15.0
March	30.037	29.985[f]	80.1	81.1[f]	72.3	72.8[f]	84.4	68.2[a]	76.3	87	10†	62	7†	67	68[f]	....	....	....	....	305	12.7
April	30.003	29.949[e]	81.4	82.0[e]	74.8	74.9[e]	85.8	70.5	78.2	90	15	66	15	70	71[e]	....	....	....	....	254	10.6
May	29.954	29.922[f]	85.4	84.8[f]	78.1	77.8[f]	88.9	73.4	81.2	92	28	71	1†	73	73[f]	....	....	....	....	186	7.7
June	30.043	30.008[d]	85.6	85.3[d]	78.1	78.6[f]	88.6	74.9	81.8	92	16	72	3	73	74[d]	....	....	....	....	281	11.7
July	30.055	30.016[e]	85.3	86.2[e]	78.0	78.1[e]	89.0	75.0	82.0	92	25	72	4	73	73[e]	....	....	....	....	347	14.5
August	30.005	29.961[e]	86.2	87.0[e]	78.6	78.7[e]	89.9	75.6	82.8	92	10	72	22†	74	73[e]	....	....	....	....	287	12.0
September	29.966	29.908[f]	86.9	86.7[e]	79.4	79.1[e]	90.8	74.0	82.4	94	17	72	3†	75	74[e]	....	....	....	....	203[c]	8.5
October	29.958	29.894[e]	85.6	85.2[e]	78.6	78.1[e]	86.4	73.1	79.8	90	12	69	21	74	74[e]	....	....	....	....	....	....
November	29.967	29.917[e]	82.5	87.3[e]	77.4	77.4[e]	86 7	73.3	80.0	90	3	69	6	74	73[e]	....	....	....	....	....	....
December	29.949	29.904[h]	81.1	81.8[h]	75.6	75.8[h]	84.6	70.8	77.7	88	21	64	28	72	72[h]	....	....	....	....	....	....
	9 a.m.		9 a.m.		9 a.m.								9 a.m.			9 a.m.		9 a.m.		9 a.m. to 9 a.m.	
1895.																					
January	29.991	29.957[e]	78.3	81.3[e]	72.7	74.5[e]	83.6	69.9	76.8	86	21	64	12	69	70[e]	74	70[e]	ene.	ene.	292	12.2
February	30.009	29.965[e]	79.9	80.7[e]	72.6	73.4[e]	84.4	70.3	77.4	87	18	66	10†	68	68[e]	71	68[e]	e. by n.	e.[e]	274	11.4
March	30.030	29.972[e]	80.4	82.6[e]	73.3	74.2[e]	85.6	71.9	78.8	88	22†	68	1	68	69[e]	69	65[e]	ene.	e. by n.[e]	327	13.6
April	30.022	29.967[f]	81.5	84.4[f]	75.3	76.0[f]	87.9	76.2	82.0	92	22	72	2†	70	71[f]	66	65[f]	e. by s.	e. by s.[f]	253	10.5
May	30.012	29.972[e]	82.2	80.6[e]	76.4	76.8[e]	87.2	71.6	79.4	91	15	70	24	72	72[e]	74	77[e]	e. by s.	e.[e]	309	12.9
June	30.043	30.028[f]	83.6	85.2[f]	78.0	78.9[f]	88.3	76.2	82.2	90	5†	72	27	74	75[f]	72	73[f]	e.	e.[f]	297	14.0
July	30.027	30.001[d]	82.8	84.8[d]	78.1	79.2[d]	88.4	76.5	82.4	92	9	73	10†	75	76[d]	78	76[d]	e.	e.[d]	371	15.5
August	29.948	29.922[f]	83.4	84.9[f]	79.3	79.9[f]	88.9	76.5	82.7	91	29	73	3†	77	77[f]	81	78[f]	e.	e.[f]	296[c]	12.3
September	29.931	29.901[e]	82.9	85.4[e]	79.2	80.0[e]	88.3	75.7	82.0	91	13	70	30	77	76[e]	79	77[e]	e. by s.	e.[e]	259	10.8
October	29.939	29.865[d]	83.7	85.0[d]	79.4	78.2[d]	88.2	74.9	81.6	90	10	71	25	77	76[d]	81	81[d]	e. by s.	e.[d]	217	9.0
November	29.943	29.888[e]	81.3	83.6[e]	76.9	78.0[e]	86.7	74.2	80.4	90	2	68	3	74	75[e]	80	79[e]	e. by s.	e.[e]	280	11.7
December	29.908	29.868[g]	79.7	81.9[g]	76.0	76.3[g]	85.4	71.2	78.3	89	14	64	19	73	73[g]	82	77[g]	e. by s.	e. by s.[g]	208	8.7

TABLE 2.—*Showing means for certain hours and years, together with other data*—Continued.

Date.	Air pressure (in inches).		Temperature (Fahrenheit).											Dew-point.		Relative humidity.		Wind.			
			Dry-		Wet.		Max.	Min.	Mean.	Highest.	Date.	Lowest.	Date.					Prevailing direction.		Average No. miles.	
	10 a.m.	3 p.m.	10 a.m.	3 p.m.	10 a.m.	3 p.m.			*					10 a.m.	3 p.m.	10 a.m.	3 p.m.	10 a.m	3 p.m.	Per day.	Per hour.
1896.																					
January	29.975	29.947[e]	77.7	81.5[e]	73.5	75.3[e]	84.6	70.6	77.6	87	28	65	29	71	72[e]	80	72[e]	ene.	e. by n.[e]	269	11.2
February	29.989	29.981[d]	78.8	81.7[d]	73.3	74.8[d]	84.2	70.9	77.6	87	7	67	1	70	71[d]	71	66[d]	e.	e.[d]	303	12.6
March	29.980	29.945[e]	79.0	82.8[e]	73.4	74.9[e]	85.6	70.2	77.9	88	7	63	5	70	70[e]	74	62[e]	e. by n.	ene.[e]	299	12.4
April	29.967	29.931[g]	80.6	84.1[g]	74.7	76.0[g]	86.7	72.4	79.6	89	25	70	20	70	71[g]	74	66[g]	e.	e. by n.[g]	336	14.1
May	29.953	29.928[g]	82.9	85.8[g]	77.7	79.1[g]	88.1	74.6	81.4	92	31	71	24	74	75[g]	77	72[g]	e.	e.[g]	279	11.6
June	30 003	29.977[e]	83.3	84.4[e]	78.8	79.3[e]	88.8	75.7	82.2	91	2†	72	17	76	76[e]	80	78[e]	e. by n.	e. by n.[e]	326	13.6
July	30.015	29.996[d]	83.5	85.5[d]	79.6	80.5[d]	88.6	76.0	82.3	90	22†	72	1†	77	78[d]	88	78[d]	e.	e.[d]	309	12.9
August	29.975	29.946[f]	85.0	86.9[f]	80.3	80.1[f]	90.5	76.4	83.4	93	29	72	7	77	78[f]	88	76[f]	e.	e.[f]	273	11.4
September	29.931	29.885[d]	86.5	88.5[d]	80.8	81.8[d]	91.4	75.4	83.4	95	10	72	12†	77	78[d]	77	72[d]	e.	e.[d]	217	9.0
October	29.932[b]	29.876[i]	86.0[b]	88.3[i]	80.6[b]	81.2[i]	91.1[b]	74.0[b]	82.6	94[b]	11	71[b]	31	77	77[i]	77[b]	71[i]	e. by s.	ene.[i]	144	6.0
November	29.921	29.859[e]	80.2	82.6[e]	75.6	76.7[e]	85.7	73.1	79.4	90	5	69	3†	72	73[e]	79	74[e]	e. by n.	e. by n.[e]	339	14.1
December	29.977	29.926[g]	80.1	83.4[g]	76.0	77.7[g]	85.6	73.2	79.4	88	12	70	31	73	74[g]	81	74[g]	e.	e.[g]	203	8.5
1897.																					
January	29.983	29.952[f]	79.3	83.3[f]	74.3	76.4[f]	85.6	70.6	78.1	88	31	64	4	71	72[f]	78	70[f]	e.	ene.[f]	237	9.9
February	30.029	29.990[d]	78.9	83.7[d]	73.1	78.4[d]	86.5	71.0	78.8	88	2†	66	9	69	70[d]	69	66[d]	e.	e.[d]	282	8.5
March	29.980	29.942[f]	80.1	83.1[f]	74.1	75.4[f]	86.6	71.3	79.0	88	4†	65	11†	70	70[f]	68	67[f]	e.	e.[f]	289	12.0
April	29.985	29.946[g]	82.6	85.2[g]	76.9	77.9[g]	89.0	73.7	81.4	90	11	69	5	73	74[g]	71	70[g]	e.	e.[g]	180	7.4
May	29.947	29.917[g]	83.4	84.3[g]	78.0	78.5[g]	83.4	76.2	79.8	92	13	71	18	77	75[g]	76	75[g]	e.	e.[g]	225	9.4
June	29.979	29.971[g]	82.8	85.1[g]	77.7	79.9[g]	88.9	75.6	82.2	95	18	72	6†	75	74[g]	78	76[g]	e.	e.[g]	276	11.5
July	29.989	29.975[d]	83.3	87.0[d]	80.6	81.5[d]	89.9	73.5	81.7	91	17†	74	27	78	79[d]	78	79[d]	e.	ene.[d]	247	10.3
August	30.014	29.994[f]	84.3[c]	86.4[f]	82.1[c]	83.3[f]	89.8	77.4	83.6	93	31	72	28	80[c]	81[f]	80[c]	80[f]	e.	e.[f]	258	10.8
September	30.007	29.989[d]	80.2	84.6[d]	80.1	81.5[d]	92.1	76.0	84.1	94	13	72	29	76	77[d]	75	73[d]	ese.	e.[c]	166	6.9
October	29.999	29.924[e]	86.8	88.9[c]	79.7	80.8[e]	89.6	75.7	82.6	94	15†	73	3	75	76[c]	73	66[c]	e.	e.[c]	158	6.6
November	.....	.....	82.2[e]	.....	75.6[e]	.....	87.3[e]	75.2[e]	81.2	89[c]	17†	72[c]	25	.....	.....	.....	.....	e.[c]	.....	.....	.....
December	.....	.....	81.8[a]	.....	74.4[a]	.....	85.9[a]	74.7[a]	80.3	88[a]	2	71[a]	8†	.....	.....	.....	.....	ene.[a]	.....	247[b]	10.3
1898.																					
January	30.016	29.991	80.5	82.4	72.5	73.4	84.7	73.3	77.5	88	4†	70	10†	66[a]	67	68[b]	63[a]	ene.	ne.	266	10.7
February	29.988	29.976	78.5	80.3	70.5	70.7	86.1	73.1	79.6	89	12	70	13	65[f]	64	65[f]	61[g]	e.	ene.	275	10.1
March	29.957	29.933	78.6	80.5	70.3	70.0	85.6	69.2	77.4	90	13	65	28	66[c]	63[c]	66[g]	.....	e.	e.	284	10.4
April	30.018	30.000	87.4	84.3	72.7	72.3	87.9	71.0	79.4	92	29	69	1	67	64	64[c]	.....	e.	e.	261	10.9
May	29.983	29.971	82.7	85.4	73.2	73.3	86.7	73.7	80.2	94	17	71	26	71	69	67	59	e.	e.	208[b]	8.5
June	30.016[a]	30.008[a]	84.0	86.1[a]	76.1[a]	76.6[a]	90.4[a]	75.0[a]	82.7	94[a]	9	71[a]	2†	71[a]	70[a]	67[a]	62[a]	e.	e.	270[b]	11.1
July	30.001	29.989	83.7	84.9	76.8	77.3	89.0	74.2	81.6	93	1†	69	7	72	72	72	68	e.	e.	276	11.5
August	29.987	29.978	83.7	85.1	77.2	78.0	88.6	74.8	81.7	92	5†	70	19	73	73	72	70	e.	e.	243[i]	10.2
September	29.939	29.925	84.2	84.4	78.2	78.3	88.2	74.0	81.1	92	27	69	21†	74	74	73	73	e.	ene.	230	9.6
October	29.954	29.940	83.5	85.6	76.6	78.6	88.5	73.2	80.8	92	11†	66	6	72	74	70	70	e.	e.	170	10.3
November	29.929	29.918	80.9	81.4	75.1	75.7	84.1	71.4	77.8	87	1†	69	12	71	72	75	74	e.	ene.	224	9.3
December	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1899.	8 a.m.	8 p.m.	8 a.m.	8 p.m.	8 a.m.	8 p.m.	.....	.....	.....	.....	.....	.....	.....	8 a.m.	8 p.m.	8 a.m.	8 p.m.	8 a.m.	8 p.m.	.....	.....
January	30.028	30.019	74.5	75 9	69.3	69.8	80.3	71.3	75.8	82	2	68	14	67	67	78	74	e.	e.	261	10.9
February	30.093	30.082	76.0	75.0	68.8	68.0	80.2	71.2	75.7	82	14	66	16	66	64	72	69	ne.	e.	270	11.2
March	30.058	30.030	76.1	74.2	67.8	66.3	80.0	71.1	75.6	82	20	65	9	63	62	65	68	n.[c]	ne.	238	9.9
April	30.021	30.003	78.7	76.3	70.8	69.9	81.7	73.6	77.6	83	4	70	24	67	67	68	73	e.	e.	232	9.7
May	30.038	30.017	80.7	78.3	73.5	72.8	84.5	75.4	80.0	86	27	71	15	70	70	71	77	e.	e.	228	9.5
June	30.030	30.023	81.6	78.9	72.2	74.0	85.2	74.2	79.7	87	12	71	6	72	72	78	80	e.	e.	240	10.0
July	30.000	29.997	81.4	79.7	75.2	74.7	85.6	75.5	80.6	87	29	70	27	73	73	76	79	e.	e.	277	11.5
August	29.964	29.954	81.9	80.2	75.8	75.4	85.7	77.1	81.4	88	6	70	7	74	74	76	80	e.	e.	288	12.0
September	29 973	29.959	82.2	80.1	76.2	76.1	85.9	76.5	81.2	88	7	70	28	74	74	76	83	e.	e.	254	10.6
October	29.918	29.909	82.1	79.1	75.6	74.7	86.0	74.9	80.4	88	24	70	9	73	73	74	82	e.	ne.	171	7.1
November	29.937	29.923	82.1	79.1	75.6	74.6	85.2	74.3	79.8	89	17	70	19	73	73	74	81	e.	e.	196	8.2
December	29.963	29.941	79.0	74.9	70.3	69.2	82.7	70.8	76.8	85	1	64	21	66	66	65	76	ne.	ne.	199	8.3

The data for the years 1892 to 1897, inclusive, were compiled from records kept by Mr. Hancock; that for the year 1898 from records by Mr. Plageman; and that for 1899 from the United States Weather Bureau records. The small letters to the right and a little above certain means indicate the number of observations missing from the column of which they are the means. For instance, [a] shows one observation missing, [b] two, and so on.

* $\frac{\text{Max.}+\text{Min.}}{2}$ † Indicates that the maximum or minimum temperature occurred on other dates also.

portion of Mr. Evelyn's record, say the first ten years, seems to be more reliable than the subsequent portion, owing, perhaps, to deterioration of the instrument or to a lack of interest or care in the observer, or both. As a possible aid in arriving at the real value of these old readings, the writer is making and preparing for publication a series of comparative readings between the barometer used by Mr. Evelyn and the station barometer in this office.

Mr. Evelyn's temperature readings are the readings of the thermometer attached to the barometer, a fact unknown at the time the first paper was prepared. Although the instrument was exposed in an east room, well arranged for the free passage of the air, the reading can not be accepted as representing the true diurnal or annual ranges of atmospheric temperature, although the annual average must be correct.

The next series of observations was made by Mr. E. A. Hancock, at that time government analyst for the island, and covers the period from 1882 to 1897, inclusive. Mr. Francis Watts, government analyst for the Leeward Islands, has kindly supplied many of the details with reference to the work of Mr. Hancock as the latter was working more or less under the direction of Mr. Watts.

Mr. Hancock was equipped with a very complete set of meteorological instruments, including a mercurial barometer, a barograph, an anemometer, and a full set of thermometers, dry, wet, maximum, and minimum. The exposure of these instruments was decidedly better and the results, therefore, of more value than the preceding series. The barometer was made by J. Hughes, London, and was placed in a room on the ground floor of Mr. Hancock's residence, about 70 feet above sea level. It appears to be an excellent instrument, of the fixed cistern type, the tube is somewhat larger than the tubes of the Weather Bureau barometers, and is inclosed in a wooden case, to which is attached an ivory scale and vernier. On the instrument the following directions for instrumental error and reducing to sea level are engraved, viz: 29.00 inches, —0.05; 29.50 inches, —0.04; 30.00 inches, —0.02; for every 100 feet of elevation, add 0.1 inch. As Mr. Hancock's place was 70 feet above sea level it is presumed that he added 0.07 inch after deducting the corrections above indicated. The thermometers were exposed in a Stevenson's screen, placed in the open about four feet above a grass-covered lawn. The maximum thermometer was made by Negretti & Zambra, the minimum by Dring & Fage, and the dry and wet by Townson & Mercer, all of London. The wet thermometer was provided with water cup and wick. The anemometer was very similar to that used by the United States Weather Bureau, and was exposed on the roof of Mr. Hancock's house, about 35 feet above the ground. The name of the maker of the instrument does not appear, but the dimensions are: diameter of cups, 3

inches; length of arm from center of axis to center of cup, 7 inches.

When Mr. Hancock gave up observing at the end of 1897, Mr. C. O. Plageman removed these instruments to his residence, which is about 200 feet above the sea, and exposed them very much in the same way as did Mr. Hancock, the greatest difference being in the anemometer, which he placed upon a platform 25 feet above the ground, especially erected for it. Being now 200 feet above sea, 0.2 inch was added to the barometer readings to reduce them to sea level.

The details of the results of Mr. Hancock's and Mr. Plageman's meteorological labors are given in Table 2, which it is advisable to study in connection with Table 1, as the basis for the latter. In obtaining the dew-point and the relative humidity, Molesworth's Psychrometric Tables were used. A day's wind record began with the morning observation, that is if the observation was taken at 9 a. m. the miles of wind were counted from 9 a. m. to 9 a. m., and if the observation was taken at 10 a. m. the wind record was counted from 10 a. m. to 10 a. m.

It is unnecessary to enter into a description of the data taken from the records of the local office of the United States Weather Bureau, as the instruments, method of exposure and reducing, etc., are all known. It ought to be stated, however, that the 8 a. m. and 8 p. m. means for January and February, as given in Table 1, are those of 1900, and all the other months, from March to December, inclusive, are those of 1899. It was thought best to use the January and February means for 1900 because the observations were made at 6 a. m. and 6 p. m. during January and the first fifteen days of February, 1899. The 12 noon means are taken from the Richard barograph traces for 1899, which are supposed to represent the actual readings of the barometer, therefore 0.03 inch has been added to get the sea-level readings.

THE HOT WEATHER OF AUGUST, 1900.

By ALFRED J. HENRY, Professor of Meteorology.

In normal summer weather, areas of low pressure (cyclones), drift eastward over the northern third of the United States at irregular intervals, generally, however, separated by a period of three or four days. As these lows move across the country the districts within their southern and eastern quadrants come successively within the influence of warm south and southwest winds in advance of the cyclone and there results a temporary warm wave. The warm wave is, however, quickly terminated by local rains and thunderstorms, after which the temperature again rises and the same sequence of events is repeated. In some years the normal eastward movement of areas of low pressure (cyclones) is checked; in such years they form as usual on the eastern side of the Rocky Mountains, or move into the United States from the British Possessions, but instead of drifting eastward persist for days over Montana, the Dakotas, Nebraska, Kansas, Colorado, and Wyoming. The barrier to their eastern movement appears to be the area of high pressure which covers the south Atlantic coast States, and also stretches across the Atlantic to the Azores and the shores of southern Europe.

This area of high pressure is merely a portion of the belt of high pressure which surrounds the globe having its maximum about the parallel of thirty degrees. It should not be conceived that pressure is uniformly high within this belt. A more accurate conception would be to consider the belt of high pressure as consisting of a series of detached areas of high pressure separated by trough-like valleys of lower pressure, the whole system having a very slow movement eastward.

The course of areas of high pressure in the United States, in summer, is generally eastward or southeastward from some point north of the Lake region. When the southeasterly course is pursued the high very often merges with the permanent high off the south Atlantic coast, and passes beyond the field of observation. In some years, however, the lower layers of the atmosphere become stagnated, and the movement of both highs and lows is sluggish and uncertain.

The initial movement which led to the hot wave during August was the slow drift of an area of high pressure southward and southwestward from southern New York, where it was located on August 4, to the Ohio and Middle Mississippi valleys, in which region it culminated about the 8th, in pressures ranging from 30.20 to 30.30 inches. During the prevalence of high pressures over the eastern half of the United States pressure was relatively low over the Atlantic south of the fortieth parallel.

The character of the weather during the heated term, as regards the amount of rain that fell and the vapor contents of the air, varied greatly. In Nebraska, the Dakotas, and Minnesota great quantities of rain fell. In North Dakota the average for the State was about five times the normal. The winds were fresh to brisk, mostly southerly or southeasterly. In Colorado, Kansas, and quite generally east of the Mississippi, there was a deficiency in the rainfall, amounting in some States to 75 per cent of the normal. The winds were gentle, and mostly from a southerly quarter, except in certain districts to be mentioned later. The periods of extremely high temperature were also times of great dryness, and the physical discomfort experienced was not so great as would have been the case with lower temperature and higher humidity. On the other hand it should be remembered that, almost without exception, the days of moderate temperature were also days of high humidity, and caused as much, if not more suffering than those of very high temperature and low humidity.

The geographic extent of the hot wave is shown by the text chart, fig. 2, below. It will be noticed that the warm weather extended from the backbone of the Rocky Mountains eastward to the Atlantic. The temperature on the mountain summits was generally above the normal, but throughout the great basin and the Plateau region it was below normal by amounts ranging from 2° to 6° daily.

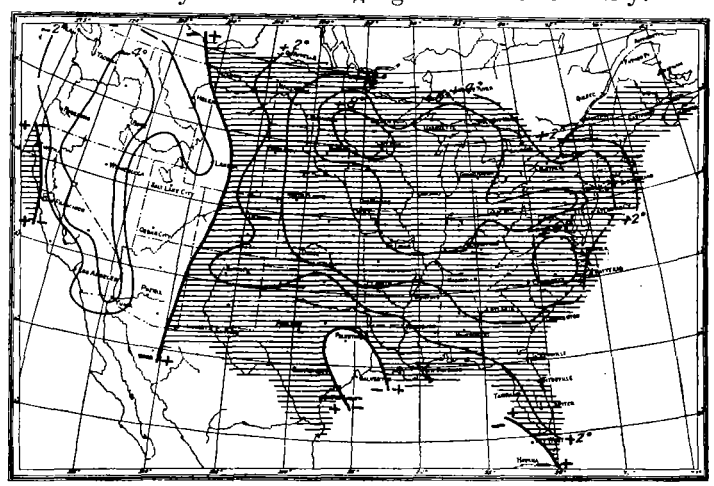

Fig. 2.—Departure from normal temperature, August, 1900.

Within the general area of high temperature may be found small areas of excessive heating, as in the neighborhood of St. Paul and St. Louis. The monthly mean temperature for August at St. Paul was 77.2°, a higher average than has ever before been recorded, and the record goes back to 1820 (using the Army record made at Fort Snelling). At St. Louis the August mean was higher than any that had hitherto been observed; the record in this case goes back to 1836.